

**REMARKS**

This is in response to the Final Office Action mailed June 4, 2003. Upon entry of this Amendment, Claims 1-12, and 14 are pending in this application. Claim 1 has been amended, as will be discussed below. Claim 12 has been amended to place the claims in proper U.S. format. New Claim 14 has been added and Claim 13 has been cancelled. Support for the amendments and new claims can be found throughout the specification and claims as originally filed, and there is no new matter added as a consequence of the amendments or new claims.

In the Amendment and Response filed March 13, 2003, Applicant made a request for an English translation of JP 55-36266 (Mayama), since the Examiner relied upon the entire document for support of the rejection of the claims. Applicant notes that such a translation was not provided to the Applicant with the Final Office Action. In response, Applicant submits herewith a English translation of Mayama as support for the arguments provided herein, attached as Exhibit A.

**The Rejections under 35 U.S.C. § 103(a) Should Be Withdrawn**

Claims 1, 2, 8-11, and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 55-36266 (Mayama) in view of U.S. Patent No. 4,500,672 (Suzuki). The Examiner alleges that Mayama discloses a tire construction with an intermediate reinforcing layer having a composition comprising natural rubber and styrene butadiene rubber, citing Table 3 of Mayama. The Examiner alleges that Mayama discloses a variety of carbon blacks in an amount less than 50 phr for use in the intermediate layer. The Examiner acknowledges that Mayama is silent with respect to the BET surface area and DBP oil absorption of the carbon black, and with respect to the specific makeup of the styrene butadiene copolymer and vinyl

aromatic chain content (VA). The Examiner alleges that it would have been obvious to one of ordinary skill in the art to form the intermediate layer of Mayama from a rubber composition including carbon black and a styrene butadiene copolymer having the presently claimed limitations.

Applicant submits that Claims 1, 2, 8-11 and 13 are nonobvious and patentable over Mayama in view of Suzuki. Claim 1 has been amended to incorporate the phrase "for motor vehicles bearing heavy loads" to further define the claimed tire. It is respectfully submitted that the amendment to Claim 1 is supported throughout the specification as originally filed, in particular at page 8, lines 2-3 and therefore does not constitute new matter. Claim 1 has been amended to recite "a solution copolymer" in place of "a copolymer prepared in solution." Support for this amendment is also found throughout the specification, and in particular, at page 17, line 9 and page 20, line 13. Since there is support for the amendments to Claim 1, these amendments do not constitute new matter.

The present invention concerns a tire for motor vehicles bearing heavy loads comprising (1) a carcass ply based on metal cords and an elastomeric carcass layer coating said cords, (2) an inner elastomeric layer, and (3) an intermediate reinforcement layer located between the carcass ply and the inner layer. The intermediate reinforcement layer is made from an elastomeric composition comprising (1) a natural or synthetic polyisoprene and a solution copolymer and (2) a carbon black. The reinforcing layers in the claimed tire impart the characteristic of improved life span for the tire.

Applicant submits that Mayama does not disclose the tire for motor vehicles bearing heavy loads of the presently claimed invention. Mayama teaches a tire for "motor cars" (title of Derwent abstract for Mayama) that are "useful in the manufacture of lightweight tubeless tires"

(Kokai Abstract, col. 1, line 9; see also English translation of Mayama, page 3, lines 2-4). Thus, these tires are manufactured for use in passenger vehicles, not heavy load bearing vehicles, as presently claimed. In fact, tire of Mayama exhibits properties desired in passenger tires, for example weight, inflating pressure, lifespan. The tire formed is a "7.25 kg tire having air pressure retention 80% after 20 days at 80°C with initial pressure 2 kg/cm<sup>2</sup> and drum endurance test 20,000 km at 80km/h." (Kokai Abstract, col. 2, lines 6-9). Thus, it is apparent that Mayama is concerned only with lightweight tires for passenger vehicles.

In addition, Mayama fails to disclose a tire for motor vehicles bearing heavy loads comprising a carcass ply based on metal cords. Such a construction is a specific characteristic of tires for motor vehicles bearing heavy loads. Since Mayama is directed to light weight passenger tires, one of skill in the art would know that the carcass plies used by Mayama comprise textile, not metal, cords. There is no mention of the use of metal cords in the carcass ply. (See English translation of Mayama). In fact, Mayama expressly mentions "nylon or polyester cords," which are not used for the carcass of tires for motor vehicles bearing heavy loads. (English translation of Mayama, page 3, line 23- page 4, line 1). The tire possesses characteristics which are a structurally different from and not disclosed or suggested by Mayama. In other words, there is no teaching or suggestion of a tire for motor vehicles bearing heavy loads comprising a carcass ply based on metal cords in Mayama.

Mayama also does not disclose a tire for motor vehicles bearing heavy loads comprising an intermediate reinforcement layer, where the layer is made of an elastomeric composition comprising, *inter alia*, a solution copolymer. The Examiner alleged that Claim 1 recites a method limitation that fails to further define the structure of the claimed article (See Final Office

Action, page 3, lines 16-21). Claim 1 has been amended to recite a solution copolymer, which is not a method limitation.

Mayama discloses a styrene butadiene rubber (SBR 1500), which is well known in the art as an emulsion copolymer of styrene butadiene. Such an emulsion copolymer of conjugated diene(s) is prepared by radical polymerization using an emulsifying system, which is present in the copolymer composition. An emulsion copolymer is not the solution copolymer used for the present invention. One of skill in the art would not agree that Mayama is generally directed to the use of a synthetic diene rubber. One of skill in the art would find that Mayama teaches a specific type of diene rubber containing an emulsifying system, for example SBR 1500.

There is no teaching of an intermediate reinforcement layer is made from an elastomeric composition comprising, *inter alia*, a solution copolymer in Mayama. In addition, there is no suggestion or motivation in Mayama to use the solution copolymer to obtain the tire of the present invention.

For the foregoing reasons, Mayama fails to teach or suggest all claim limitations of the present invention.

Applicant disagrees with the Examiner's contention that "one of ordinary skill in the art at the time of the invention would have readily appreciated the use of the assembly of Mayama in a heavy-duty tire construction as the benefits disclosed by Mayama (reduced ply thickness and maintaining tire weight) are equally desirable in heavy-duty tires." (Final office action, page 7, line 17-20). Mayama teaches that the intermediate reinforcing layer should be between 0.5 and 1 mm, and no greater than 2.3 mm. (English translation of Mayama, page 8, lines 4-8). In contrast, the present disclosure suggests that the intermediate reinforcing layer should have a "sufficiently great thickness" to inhibit the diffusion of oxygen (present specification, page 4,

line 11). The present specification expressly states that the intermediate reinforcing layer should be between 1 and 4 mm in thickness (page 13, lines 16 –17). There is no motivation to produce a thinner intermediate reinforcing layer given the need to protect the carcass of the tire of the present invention from degradation due to oxygen exposure. Thus, the present specification is clearly distinguished from Mayama, since a thicker intermediate reinforcing layer is desired.

Suzuki also fails to disclose the tire for motor vehicles bearing heavy loads of the present invention comprising, *inter alia*, a carcass ply based on metal cords and an intermediate reinforcement layer is made from an elastomeric composition comprising a solution copolymer. Suzuki is primarily concerned with the use of specific carbon blacks to impart to rubber compositions the characteristics of low heat build-up property and a high reinforcing properties. There is no disclosure of a tire for motor vehicles bearing heavy loads with a carcass ply based on metal cords and the use of solution copolymers in Suzuki. Since these limitations are also not taught in Suzuki, the references, alone, or in combination fail to teach or suggest all the claim limitations of the present invention.

For all the foregoing reasons, the combination of the cited references would not be sufficient to render Claim 1 unpatentable. Since Claims 2 and 8-11 depend from Claim 1, they are also not rendered nonobvious and patentable over Mayama in view of Suzuki. Thus, Applicant respectfully requests withdrawal of the rejection of Claims 1, 2, 8-11, and 13 under 35 U.S.C. § 103(a) as unpatentable over Mayama in view of Suzuki.

Claims 3 and 5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayama in view of Suzuki as applied to Claim 1 above, and further in view of U.S. Patent No. 6,156,822 (Materne). The Examiner alleges that it would have been obvious to modify Mayama

in combination with Suzuki according to the teachings of Materne to obtain the tire claimed in Claims 3 and 5.

Applicants submit that Claims 3 and 5 are nonobvious and patentable over Mayama in view of Suzuki as applied to Claim 1 above and further in view of Materne. Claims 3 and 5 depend from Claim 1 or 2, neither of which, for the reasons discussed above, is obvious over Mayama in view of Suzuki. In addition, Materne fails to disclose the tire for motor vehicles bearing heavy loads of the present invention comprising, *inter alia*, a carcass ply based on metal cords. Therefore, the references alone, or in combination, fail to disclose each and every limitation of Claims 3 and 5 and cannot be rendered obvious. Applicant respectfully requests withdrawal of the rejection of Claims 3 and 5 under 35 U.S.C. § 103(a).

Claim 4 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayama, Suzuki and Materne as applied to Claim 3 above, and further in view of U.S. Patent No. 6,333,375 (Nakamura). The Examiner alleges that it would have been obvious to include a silica disclosed by Nakamura in combination with the disclosures of Mayama, Suzuki and Materne to obtain the tire of Claim 4.

Applicants submit that Claim 4 is nonobvious and patentable over Mayama, Suzuki and Materne as applied to Claim 3 above, and further in view of Nakamura. Claim 4 depends from Claim 3, which, for the reasons discussed above, is not obvious over Mayama in view of Suzuki as applied to Claim 1 above and further in view of Materne. In addition, Nakamura fails to disclose the tire for motor vehicles bearing heavy loads of the present invention comprising, *inter alia*, a carcass ply based on metal cords. Therefore, the references alone, or in combination, fail to disclose each and every limitation of Claim 4 and cannot be rendered obvious. Applicant respectfully requests withdrawal of the rejection of Claim 4 under 35 U.S.C. § 103(a).

Claim 6 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayama in view of Suzuki as applied to Claim 1, and further in view of U.S. Patent No. 5,504,159 (Sturm). The Examiner alleges that it would have been obvious to one of skill in the art to modify Mayama in combination with Suzuki according to the knowledge well known in the art and the antioxidant disclosed in Sturm to obtain the tire of Claim 6.

Applicants submit that Claim 6 is nonobvious and patentable over Mayama in view of Suzuki as applied to Claim 1 above and further in view of Sturm. Claim 6 depends from Claim 1 or 2, neither of which, for the reasons discussed above, is obvious over Mayama in view of Suzuki. In addition, Sturm fails to disclose the tire for motor vehicles bearing heavy loads of the present invention comprising, *inter alia*, a carcass ply based on metal cords and an intermediate reinforcement layer made from an elastomeric composition comprising a solution copolymer. Therefore, the references alone, or in combination, fail to disclose each and every limitation of Claim 6 and cannot be rendered obvious. Applicant respectfully requests withdrawal of the rejection of Claim 6 under 35 U.S.C. § 103(a).

Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayama in view of Suzuki as applied to Claim 1, and further in view of U.S. Patent No. 3,563,928 (King). The Examiner alleges that it would have been obvious to one of skill in the art to include a metal salt as taught by King with the tire of Mayama in combination with Suzuki to obtain the tire of Claim 7.

Applicants submit that Claim 7 is nonobvious and patentable over Mayama in view of Suzuki as applied to Claim 1 above and further in view of King. Claim 7 depends from Claim 1 or 2, neither of which, for the reasons discussed above, is obvious over Mayama in view of Suzuki. In addition, King fails to disclose the tire for motor vehicles bearing heavy loads of the

present invention comprising, *inter alia*, a carcass ply based on metal cords. Therefore, the references alone, or in combination, fail to disclose each and every limitation of Claim 7 and cannot be rendered obvious. Applicant respectfully requests withdrawal of the rejection of Claim 7 under 35 U.S.C. § 103(a).

Claim 12 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mayama in view of Suzuki as applied to Claims 1 and 2 above, and further in view of U.S. Patent No. 3,884,993 (Gros). The Examiner alleges that it would have been obvious to one of skill in the art to include kaolin as taught by Gros in the intermediate reinforcing tire composition of Mayama in combination with Suzuki to obtain the tire of Claim 12.

Applicants submit that Claim 12 is nonobvious and patentable over Mayama in view of Suzuki as applied to Claims 1 and 2 above and further in view of Gros. Claim 12 depends from Claim 1 or 2, neither of which, for the reasons discussed above, is obvious over Mayama in view of Suzuki. In addition, Gros fails to disclose the tire for motor vehicles bearing heavy loads of the present invention comprising, *inter alia*, a carcass ply based on metal cords. Therefore, the references alone, or in combination, fail to disclose each and every limitation of Claim 12 and cannot be rendered obvious. Applicant respectfully requests withdrawal of the rejection of Claim 12 under 35 U.S.C. § 103(a).

#### New claim 14

Applicant has added new claim 14, directed to a method of manufacturing the tire for motor vehicles bearing heavy loads of the present invention. Support for the new claim can be found throughout the specification, and in particular, at pages 14, lines 3-12 and Examples 1 and 2, page 16, line 15 to page 22.




Applicant submits that new claim 14 is unpatentable over Mayama in view of Suzuki, and further in view of Materne, Nakamura, Sturm, King, and Gros for the reasons stated above. Therefore, claim 14 should be allowable.

**CONCLUSION**

Based on the foregoing amendments, Applicant submits that the present application is in condition for allowance. A Notice of Allowance is respectfully requested.

Applicant requests a one month extension of time and enclose herewith the required fee pursuant to 37 C.F.R. § 1.17(a)(1). The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication to Deposit Account No. 02-4377. A duplicate copy of this paper is enclosed.

Respectfully submitted,

  
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